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The place of the Ozaki procedure in the treatment of aortic valve disease

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The number of options for approaching a diseased aortic valve is probably the largest existing in the field of surgery. The spectrum starts with transcatheter balloon angioplasties, continues with surgical reconstructions and with the prosthetic replacements of the valve (including at times the aortic root), and ends up with prosthesis implantations (the so-called TAVI procedure). Solely in the “replacement store”, you’ll be offered another large array of possibilities, ranging from a Ross procedure (which encompasses three different techniques) to the use of homografts, or biological (stented or non-stented) and mechanical prosthesis. There are wide overlaps between all these methods regarding their advantages or disadvantages, but it remains a fact that two major principles continue to govern our choices: (1) the closer we stay to a native aortic valve the better, and (2) the younger the patient, the more decisive a slight advantage of a technique will appear over time.

The Ozaki procedure – which is a tailored replacement of each individual valvular leaflet with treated autologous pericardial patches – tends to exactly replicate the anatomy of a normal aortic valve. In this regard, the challenge has been met. What is still inferior to a native valve is the presence of non-living tissues. And this probably will be the Achilles’ heel of the method, as it has been whenever a patch of pericardium has been employed to replace or to augment a leaflet. In this respect, the mid-term results of reconstructed aortic leaflets are worth remembering. The stability of the repair remains over 96% at 8 years if no foreign material (always autologous pericardium) has been used, whereas it drops to under 80% with its use [1]. The attrition rate is directly proportional to the amount of non-living tissue present in the leaflets.

Given the characteristics of all methods, the Ozaki procedure will find its place between the repair of the valve and its classical replacement, especially in the face of a small annulus and, possibly, in young patients. Its major advantage remains the creation of a wide opening area with a resulting low transvalvular gradient. The longevity of the

tanned autologous pericardium might exceed that of the well-established pericardial prostheses, but this assumption remains to be proven. The haemodynamic advantage, however, diminishes with the patients’ age and in the face of a decent or of an enlarged aortic annulus. In this setting, the surgical complexity and the longer ischaemic time of the procedure will have to be weighed against the outcome with some rapidly expanding prostheses (some of them show virtually no annular area loss [2]). Finally, in children where the growth of the heart remains an issue, the Ross procedure will still be superior [3].

The Basel team must be commended for having successfully introduced the Ozaki procedure into our latitudes and for having achieved nice results with a demanding operation [4]. Even though the procedure can provide an excellent and, in many aspects, a superior outcome for many diseased aortic valves, it is still not equivalent to a well-performed valve repair.

Disclosure statement

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